

**Notice of Allowability**

Application No.

09/784,151

Examiner

Zachary A. Davis

Applicant(s)

KAWASAKI ET AL.

Art Unit

2137

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the Request for Continued Examination and amendment received 13 October 2005.
2. ☒ The allowed claim(s) is/are 1-17.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some\* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |  |
|---|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment                    |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material          | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance   |
|   | 9. <input type="checkbox"/> Other _____.   |

## **EXAMINER'S AMENDMENT**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submissions filed on 13 September 2005 and 13 October 2005 have been entered.

### ***Examiner's Amendment***

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Rustan Hill on 21 December 2005.

The application has been amended as follows:

**IN THE CLAIMS:**

Please **REPLACE** Claim 11 with the following amended claim:

11. A debugging method for utilizing a debug I/F circuit and debugging an internal circuit externally, comprising the steps of:

transmitting a transmission key externally when the debug I/F circuit is activated;  
and

authenticating a reception signal received externally and the transmission key to enable operation of the debug I/F circuit,

wherein the step of authenticating further comprises connecting a CPU to said debug I/F circuit through a debug bus and connecting a peripheral circuit to said CPU through an internal bus separated from said debug bus, wherein the step of authenticating further comprises a step of starting said transmitting step by writing said transmission key to said an authentication circuit with said CPU.

***Allowable Subject Matter***

3. Claims 1-17 are allowed.
4. The following is an examiner's statement of reasons for allowance:

Independent Claim 1 is directed to an IC with a debug interface circuit.

Independent Claim 6 is directed to an electronic device including an IC as per Claim 1.

Independent Claim 11 is directed to a method of debugging an IC as per Claim 1.

Independent Claim 17 is directed to a debugger for debugging an IC as per Claim 1.

Each of the independent claims includes a form of authentication or authentication circuit by which a transmission key is sent through the debug interface to an external debugger, and each independent claim further recites the specific connections of a CPU with a debug bus and a separate internal bus. Each independent claim additionally recites that the CPU writes the transmission key to the authentication circuit to initiate the sending of the transmission key. The closest prior art, Yishay, et al, US Patent 5704039, discloses an IC with a debug interface circuit, and that the IC can be unlocked to allow debugging using a security circuit. However, Yishay does not explicitly disclose unlocking or authenticating using a transmission key sent outside the IC. Further, as noted by Applicant's representative in the personal interview conducted 11 October 2005, although Yishay does disclose a CPU connected to a debug interface circuit through a debug bus and connected to a peripheral circuit through an internal bus, the peripheral circuits and internal bus are not analogous to those claimed. Akiyama et al, US Patent 5784464, discloses authentication in which a transmission key is sent out of

the authenticating device and authentication is performed in a similar manner as claimed; however, Akiyama does not suggest the internal connections of a CPU to various buses as claimed. Further, neither Yishay nor Akiyama explicitly teach or suggest that the CPU writes the transmission key to an authentication circuit to start the sending of the transmission key. Therefore, for the above-noted differences, the cited prior art, Yishay and Akiyama, either singularly or in combination, fail to anticipate or render obvious all of the claimed limitations.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Tabe et al, US Patent 6622184, discloses a system including an external debugger/emulator in which access to debugging functions can be authorized by inputting a password.
- b. Mayer, US Patent 6769065, discloses a system in which an external debugger is granted access to debugging functions via an access authorization monitoring device.

- c. EP 1168181 is a European patent document corresponding to the present application.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zachary A. Davis whose telephone number is (571) 272-3870. The examiner can normally be reached on weekdays 8:30-6:00, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Emmanuel Moise can be reached on (571) 272-3865. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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EMMANUEL L. MOISE  
SUPERVISORY PATENT EXAMINER